USO E MANUTENZIONE
USE AND MAINTENANCE
GEBRAUCH UND WARTUNG
EMPLOI ET ENTRETIEN
EMPLEO Y MANTENIMIENTO

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1.0 INTRODUCTION

This booklet describes the regulations for use, maintenance for seeding machine. This manual is an integral part of the product, and must be kept in a safe place for consultation throughout the life of the machine.

ATTENTION

- The Manufacturer reserves the right to change the machine without having to promptly update this manual. In the event of disputes, the valid version is the Italian text.
- The machine was manufactured for dosing and distributing commercial seeds of standard quality.
- The machine was designed for professional skilled operators who are the only ones qualified for operating it.
- Minors, illiterates and persons under altered physical or psychological conditions must not be allowed to operate the machine.
- Operators who do not have a suitable driving license, or who are not properly informed and trained, must not be allowed to operate the machine.
- The operator must check that the machine operates correctly, and must replace and repair parts subject to wear that may cause damage.
- The customer should instruct personnel on accident risks, on the operator safety devices provided, on noise emission risks and on general accident prevention regulations provided for by the international directives and by the law in the country in which the machines are used.
- In any case, the machine should be used exclusively by skilled operators who will be held to follow scrupulously the technical and accident-prevention instructions in this manual.
- It is the user's responsibility to check that the machine is operated only in optimum conditions of safety for people, animals and property.

1.1 GUARANTEE

The guarantee is valid for a year, against all defects of material, from the date of delivery of the equipment.

On delivery, check that the equipment has not been damaged during transport and that the accessories are integral and complete. POSSIBLE CLAIMS MUST BE PRESENTED IN WRITING WITHIN EIGHT DAYS OF RECEIPT.

The purchaser will enforce his rights on the guarantee only when he has respected the conditions concerning the benefit of the guarantee, set out in the supply contract.

1.1.1 EXPIRY OF GUARANTEE

Besides what has already been set out in the supply contract, the guarantee expires:

- If the limits set out in the technical data table are overshot.
- If the instructions set out in this booklet have not been carefully followed.
- If the equipment is used badly, defective maintenance or other errors by the client.
- If modifications have been carried out without written authorization of the manufacturer and if non original spare parts have been used.

1.2 DESCRIPTION OF THE SEEDER

The "MONICA" precision planting unit is a machine that is particularly suitable for precision seed planting, for multiple uses and with any type of seed on soil that has been tilled and prepared by conventional methods or partially tilled with crop residues present.

The planting unit is pneumatically operated and can also be used for soil fertilization and parasite prevention treatment. This agricultural equipment, can only operate by means of a Cardan shaft applied to the power take-off of an agricultural tractor equipped with a lifting unit, with a three-point universal joint.

The "MONICA" series planting unit is currently made in several versions, each with a basic frame onto which are attached the required seeding elements equipped with microgranulator and/or fertilizer spreader units.

There are, moreover, various types of electronic instruments for seeding control and for the calculating the area seeded (Ha).

CAUTION

The seeder has been designed exclusively for seeding in the ground. The recommended working speed is 6÷8 km/h. The planting unit must only be transported by road with the tanks and hoppers empty and at max speed of 25 km/h. Any use other than that described in these instructions could damage the machine and be extremely dangerous for the user.

Good performance depends on the correct use and proper maintenance of the equipment. It is advisable there-fore scrupulously to observe the instructions provided in this manual in order to prevent the emergence of problems which could jeopardize the machine's lifespan or its performance. All the information required for using the machine in the best way and instructions and advice for its correct maintenance are also supplied. It is also important to adhere to what is described in these instructions could damage the machine and be extremely dangerous for the user.

The Manufacturer is, of course, available to assure immediate and thorough technical assistance and all that may be necessary to ensure that the equipment operates well, giving first class performance.
1.4 IDENTIFICATION

Each individual machine has an identification plate (Fig. 1) indicating the following details:
1) Mark and address of the Manufacturer;
2) Type and model of machine;
3) Unloaded mass, in Kilograms;
4) Mass full load, in Kilograms;
5) Registration of the machine;
6) Year of manufacture;
7) CE mark.

You are advised to note down your data on the form below, along with the date of purchase (8) and the dealer’s name (9).

8) ____________________  
9) ____________________

This information must always be quoted whenever assistance or spare parts are needed.
1.5 HANDLING

ATTENTION

The Customer must apply the rules envisaged in the European Directives EEC 391/89 and 269/90 and subsequent modifications on the possible risks for loading and unloading operators caused by manual handling of loads.

During handling operations wear suitable personal protection equipment:

- Overalls
- Gloves
- Shoes
- Hardhat

If the machine has to be handled, it should be lifted by hooking cloth ropes to the attachment points provided and using a suitable hoist or crane with sufficient capacity (Fig. 2). Because of the danger involved, this operation should be carried out by trained and responsible personnel. The mass of the machine is on the identification Plate (Fig. 1). Stretch the rope to keep the machine level. The hook points can be detected by finding the “hook” symbol (13, Fig. 4). Hook up at points: A, B and C.

ATTENTION

- Packaging materials (pallets, cartons, etc.) must be disposed of as prescribed by the existing regulations through authorised disposal companies.
- Parts making up the machine must not be lifted by hooking them up from moving or weak parts such as guards, electrical runways, pneumatic parts, etc.
- Standing under suspended loads is not allowed; unauthorised personnel are not allowed access to the work sites; it is mandatory to wear overalls, safety footwear, gloves and a hardhat.
1.6 ASSEMBLY DRAWING (fig. 3)

1. Seed distributors;
2. Fertilizer distributor hopper;
3. Vacuum pump;
4. Vacuum gauge;
5. Air distributor;
6. Seed hopper;
7. Seed-planting depth adjuster;
8. Press wheels;
9. Drive wheel for seed distributors;
10. Drive wheel for fertilizer speader;
11. Disc-type planter shoe part of planting unit;
12. Universal joint for planting unit drive;
13. Depth wheels;
14. Load bearing structure;
15. Identification plate;
16. Fertilizer distribution adjuster (Minimax);
17. Row marker control;
18. Power take-off;
19. Cardan shaft support;
20. Sod breaker;
1.7 WARNING SIGNS
The signs described in Fig. 4 are reproduced on the machine. Keep them clean and replace them if they should come off or become illegible. Carefully read each description and learn their meanings by heart.

2.1.1 WARNING SIGNALS
1) Before operating, carefully read the instruction booklet.
2) Before carrying out maintenance, stop the machine and consult the instruction booklet.

2.1.2 DANGER SIGNALS
3) Risk of inhaling harmful substances. Wear a dust mask.
4) Danger of getting squashed during opening. Keep at a safe distance from the machine.
5) Danger of getting hooked by the Cardan shaft. Keep away from moving parts.
6) Danger of getting trapped. Keep away from moving parts.
7) Danger of getting squashed during closure. Keep at a safe distance from the machine.
8) When using anticryptogamic chemicals, use adequate protection.
9) High noise level. Use adequate acoustic protection.
10) Pipes with high pressure fluids. Take care if flexible pipes break as oil could spurt. Read the instruction manual.
11) Before engaging the pto, check that the rpm rate is that prescribed. Never exchange the 540 rpm rate for 1000 rpm.

2.1.3 INDICATOR SIGNALS
12) Wear safety clothing.
13) Signs the hooking points for lifting.
14) Greasing point.
2.0 SAFETY REGULATIONS AND ACCIDENT PREVENTION

Pay careful attention to the danger signs shown in this manual.

There are three levels of danger signs:
DANGER. This sign warns that the operations described will cause serious injury, death or long term health risks, if they are not carried out correctly.

WARNING. This sign warns that to operations described could cause serious injury, death or long term health risks, if they are not carried out correctly.

CAUTION. This sign warns that the operations described could cause serious damage to the machine, if they are not carried out correctly.

Carefully read all the instructions provided before using the machine; if in doubt, contact the technical staff of the Manufacturer’s dealer. The manufacturer declines all responsibility for consequences resulting from the non observance of the safety and accident prevention regulations described below.

General norms
1) Pay close attention to the danger signs in this manual and on the seeder.
2) The labels with the instructions attached to the machine give abbreviated advice for avoiding accidents.
3) Scrupulously observe, with the help of the instructions, the safety and accident prevention regulations.
4) Avoid touching the moving parts in any way whatsoever.
5) Any work on and adjustment to the machine must always be done with the engine switched off and the tractor blocked.
6) People or animals must not, under any circumstances be transported on the equipment.
7) It is strictly prohibited to drive the tractor, or allow it to be driven, with the equipment attached by persons not in possession of a driver’s license, inexpert or in poor conditions of health.
8) Before starting the tractor and the equipment, check that all safety devices for transport and use are in perfect working order.
9) Before starting up the equipment, check the area surrounding the machine to ensure that there are no people, especially children or pets, nearby, and ensure that you have excellent visibility.
10) Use suitable clothing. Avoid loose clothing or garments with parts that could in any way get caught in the rotating or moving parts of the machine.
11) Before starting work, familiarize yourself with the control devices and their functions.
12) Only start working with the equipment if all the protective devices are in perfect condition, installed and in the safe position.
13) It is absolutely prohibited to stand within the machine’s radius of action where there are moving parts.
14) It is absolutely forbidden to use the equipment without the guards and container covers.
15) Before leaving the tractor, lower the equipment hooked to the lifting unit, stop the engine, pull the hand brake and remove the key from the dashboard, make sure that the chemical substances safely out of reach.
16) The driver’s seat must never be left when the tractor engine is running.
17) Before starting the equipment, check that the supporting feet have been removed from under the seeder; check that the seeder has been correctly assembled and regulated; check that the machine is in perfect working order, and that all the parts subject to wear and tear are in good condition.
18) Before releasing the equipment from the third point attachment, put the hoist command lever into the locked position and lower the support feet.
19) Only operate when visibility is good.
20) All operations must be carried out by expert personnel, equipped with protective gloves, in a clean and dust-free environment.

Tractor hitch
21) Hook the equipment to a suitable, sufficiently-powered tractor by means of the appropriate device (lifter), in conformity with applicable standards.
22) The class of the equipment attachment pins must be the same as that of the lifter attachment.
23) Take care when working within the range of the lifting arms as this is a very dangerous area.
24) Be very careful when hooking and unhooking the equipment.
25) It is absolutely forbidden to stand between the tractor and linkage for manoeuvring the lifting controls from the outside (Fig. 5).
26) It is absolutely forbidden to stand in the space between the tractor and the equipment (Fig. 5) with the engine running and the universal joint linked up and without the hand brake pulled and a block placed under the wheels to block them.
27) The attaching of additional equipment onto the tractor brings about a different distribution of weight on the axles. Check the compatibility of the tractor performance with the weight that the seeder transfers onto the three-point linkage. If in doubt consult the tractor Manufacturer.
28) Comply with the maximum admissible weight for the axle, the total mobile weight, transport regulations and the highway code.
Transport on Road
29) When driving on public roads, be sure to follow the highway code of the country involved.
30) Any transport accessories must be provided with suitable signs and guards.
31) It is very important to remember that road holding capacity as well as direction and braking capacity can be influenced, sometimes considerably, by equipment being either carried or towed.
32) When taking a curve, calculate that the centrifugal force and the centre of gravity will shift depending on whether equipment is being carried or not.
33) For transport, adjust and fasten the lateral lifting arm chains of the tractor; check that the seed and fertilizer hopper covers are closed properly; lock the hydraulic lifting control lever; hook the seeders unit following the instructions referring on page 63.
34) Road movements must be performed with all tanks empty.
35) For displacements beyond the work area, the equipment must be placed in the transportation position. This also involves the necessity of disconnecting any hydraulic connection to the tractor.
36) Upon request the Manufacturer will supply supports and tables for signaling of dimensions. 37) When the dimensions of carried or partially-carried equipment conceal the tractor's signaling and lighting devices, these must also be installed on the equipment itself, in conformity with regulations of the highway code of the country involved. When in operation make sure that the lighting system is in perfect working order.

Cardan shaft
38) The equipment installed can only be controlled by means of the Cardan shaft complete with the necessary overload safety devices and guards fastened with the appropriate chain.
39) Only the Cardan shaft supplied by the Manufacturer must be used.
40) The engine must not be running when installing and removing the Cardan shaft.
41) Care must be taken regarding the safety and correct assembly of the Cardan shaft.
42) Use the chain provided to stop the Cardan shaft from rotating.
43) Always check carefully that the Cardan shaft guard is always in position, both during transportation and operation.
44) Frequently and at intervals check the Cardan shaft guard, it must always be in excellent condition.
45) Before engaging the power take-off, check that the set rpm corresponds to that indicated by the sticker on the equipment.
46) Before inserting the power take-off, make sure that there are no people or animals nearby and that the rpm selected corresponds to that permitted. Never exceed the maximum admissible speed.
47) Watch out for the rotating universal joint.
48) Do not insert the power take-off with the engine off or synchronized with the wheels.
49) Always disconnect the power take-off when the Cardan shaft is at too wide an angle (never more than 10° – Fig. 6) and when it is not being used.
50) Only clean and grease the Cardan shaft when the power take-off is disconnected, the engine is off, the hand brake pulled and the key removed.
51) When not in use, place the Cardan shaft on the support provided for it.
52) After having dismantled the Cardan shaft, place the protective cover on the power take-off shaft again.

fig. 6
**Safety measures concerning the hydraulics**

53) At the moment of connecting the hydraulic tubes to the hydraulic system of the tractor, make sure that the hydraulic systems of the operating machine and the tractor are not under pressure.

54) For the operative hydraulic connections between tractor and operating machine, the sockets and plugs should be marked with colours to distinguish them, to avoid them being used wrongly. There would be a danger of accident if the connections were to be swapped round.

55) The hydraulic system is under high pressure; because of the accident risk, when searching for leakage points special auxiliary instruments should be used.

56) Not to never carry out the search losses with the fingers or the hands. The liquids that exit from the holes can be nearly not visible.

57) During transport by road the hydraulic connections between tractor and operating machine should be disconnected and secured to the support provided.

58) Do not use vegetable oils under any circumstance. These could cause a risk of damage to the cylinder gaskets.

59) The operating pressures of the hydraulic system should be between 100 bars and 180 bars.

60) Never exceed the indicated hydraulic system pressure levels.

61) Check that the quick hook-ups are coupled correctly; parts of the system could get damaged if they are not.

62) Oil escaping at high pressure can cause skin injury with the risk of serious wounds and infection. Call a doctor immediately if such an incident occurs. If the oil with surgical means is not removed quickly, can take place serious allergies and/or infections. Therefore, the installation of hydraulic components in the tractor driver's cab is strictly forbidden. All the components of the system should be positioned carefully to avoid parts being damage during use of the equipment.

63) In case of participation on the hydraulic system, to unload the hydraulic pressure carrying all the hydraulic commandos in all the positions some times after to have extinguished the motor.

**Maintenance in safety**

Durante le operazioni di lavoro e manutenzione, utilizzare gli idonei dispositivi di protezione individuale (es.):

- Overalls
- Gloves
- Shoes
- Goggles
- Helmets

64) Do not proceed with maintenance and cleaning if the power take-off has not been disconnected first, the engine power off, the hand brake pulled and the tractor blocked with a wooden block or stone of the right size under the wheels.

65) Periodically check that the bolts and nuts are tight, and if necessary tighten them again. For this it would be advisable to use a torque wrench, respecting the values of 53 Nm for M10 bolts, resistance class 8.8, and 150 Nm for M14 bolts resistance class 8.8 (Table.1)

66) During assembling, maintenance, cleaning, fitting, etc., with the seeding machine raised, place adequate supports under the equipment as a precaution.

67) The spare parts must correspond to the manufacturer’s specifica-tions. Use only original spares.

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**Table 1**

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<td>22.5</td>
<td>56.0</td>
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<td>56.0</td>
</tr>
</tbody>
</table>

**GASPARDO**

cod. G19502563

48
3.0 INSTRUCTIONS FOR USE

To obtain the best performance from the equipment, carefully follow what is set up below.

⚠️ ATTENTION

All maintenance work, adjustments and preparation for operation, must be carried out with the power take-off of the tractor disconnected, the seeder on the ground on its supporting feet, the tractor not running, the wheels blocked and the key turned off.

3.1 ATTACHMENT THE TRACTOR

The seeder may be attached to any tractor fitted out with a three-point universal joint.

⚠️ DANGER

The attachment to the tractor is a very dangerous phase. Be sure to follow the instructions carefully throughout the operation.

3.1.1 HOOKING

The correct tractor/seeder position, is determined by placing the equipment at a distance from the tractor so that the Cardan joint remains extended by 5-10 cm from its maximum closing position. At this point, proceed as follows:

1) Hook the lifter bars onto the pins provided (1, Fig. 7) Block with the snap split pins. Hook the chains to the lifting bars

2) Connect the third upper point (2, Fig. 8); the pin will be blocked with the appropriate split pin; use the adjusting tierod (3, Fig. 8) to keep the seeder perpendicular to the ground (Fig. 8)

3) Block the movement of the parallels of the tractor on the horizontal plane using the stabilizers provided, so eliminating the side swaying of the equipment. Check that the tractor hoisting arms are positioned at the same height from the ground.

4) Adjust the height of the tractor lifting arms:
   a) In the work position, adjust the path of the tractor hoisting arms to guarantee adequate downward movement of the planting unit. Otherwise, when hollows are encountered in the seedbed, seed distribution could be irregular due to the seed planting unit transmission wheels slipping (planing effect).
   b) in the transporting position, adjust the arms so that the seeder does not, for any reason whatsoever, come into contact with the ground.

5) The hydraulic pipes must be connected correctly to the tractor distributors following the instructions on each pipe (Fig. 9).

6) Connect the Cardan shaft and make sure that it is perfectly blocked on the power take-off (Fig. 10). Check that the guard turns freely and fix it with the chain provided.

During the work, regularly check that the equipment is perpendicular.

⚠️ ATTENTION: Always follow the indications recommended by the Manufacturer for the transport of the seeder.
3.1.2 UNHOOKING THE SEED DRILL FROM THE TRACTOR

DANGER

Unhooking the seed drill from the tractor is a very dangerous operation. Great caution must be used and the whole operation must be carried out following the instructions.

For a correct unhooking operation of the seed drill it is necessary to proceed on a horizontal level.

1) Lower the supporting base elements
2) Slowly lower the seed drill until it rests completely on the ground.
3) Disconnect the hydraulic pipes from the tractor distributors and protect the quick couplings with the caps.
4) Sganciare l'albero cardanico dalla trattrice, ed appoggiarlo al gancio predisposto.
5) Loosen and unhook the third point, following the first and second.

3.2 ADAPTING THE CARDAN SHAFT

The Cardan shaft, supplied with the machine, is of standard length. It might, therefore, be necessary to adapt the Cardan shaft. Should this be the case, before proceeding, consult the Manufacturer.

CAUTION

- When the Cardan shaft is withdrawn to the end of its stroke, the two pipes should overlap by at least 15 cm (A Fig. 11). When it is inserted all the way, the minimum admissible play is 4 cm (B Fig. 11).
- When using the equipment on another tractor, check that conditions are as stated above and check that the guards completely cover the rotating parts of the Cardan shaft.

ATTENTION

For transportation of the seeder, always follow the Manufacturer's instructions.

3.3 STABILITY OF PLANTING UNIT AND TRACTOR DURING TRANSPORT

When a planting unit is coupled to a tractor, so becoming an integral part of it for the purposes of road travel, the stability of the planting unit-tractor complex may change and cause driving or operating difficulties (rearing up or side-slipping of the tractor). The condition of equilibrium can be restored by placing a sufficient number of ballasts on the front of the tractor so that the weights on the two tractor axles are distributed sufficiently evenly.

To work in safety the instructions given in the highway code should be followed; these prescribe that at least 20% of the weight of the tractor alone should be borne by the front axle and that the weight on the arms of the hoist should not be more than 30% of the weight of the tractor itself. These factors are summarized in the following formulas:

\[ Z \geq \frac{[M \times (s_1 + s_2)] - (0.2 \times T \times i)}{(d + i)} \]

The symbols have the following meanings (please see Fig. 12 for reference):

- **M** (Kg) Mass weighing on arms off hoist with full load (weight + mass, see cap. 1.4 Identification).
- **T** (Kg) Mass of tractor.
- **Z** (Kg) Total mass of ballast.
- **i** (m) Tractor wheelbase, that is, the horizontal distance between the tractor axles.
- **d** (m) Horizontal distance between the centre of gravity of the ballast and the front axle of the tractor.
- **s_1** (m) Horizontal distance between the inferior point of attachment of the equipment and the posterior axle of the tractor (equipment supported to the ground).
- **s_2** (m) Horizontal distance between the barycentre of the equipment and the inferior point of attachment of the equipment (equipment supported to the ground).

The amount of ballast that should be applied according to the formula is the minimum required for circulation on the road. If for reasons of tractor performance or to improve the set-up of the planting unit during operation it is thought necessary to raise these values, please refer to the registration document of the tractor to check its limits.

When the formula for calculating the ballast gives a negative result it will not be necessary to add any weight. In any case, as long as the limits of the tractor are respected, a suitable quantity of weights may be applied in order to ensure greater stability during travel. Check that the tractor tyres are suitable for the load.
3.4 TELESCOPIC FRAME

The seeder is suitable only for the uses indicated. Any other use different from that described in these instructions could cause damage to the machine and represent a serious hazard for the user.

Regular operation depends on the correct use and adequate maintenance of the equipment. It is advisable therefore to observe scrupulously what is described in order to prevent any inconveniences that could prejudice proper operation and duration. It is just as important to keep to what is described in this booklet since the Manufacturer declines all responsibility due to negligence and non-observance of these rules.

At any rate the Manufacturer is available to assure immediate and accurate technical assistance and all that may be necessary for the improved operation and better performance of the equipment.

Check that the quick hook-ups are coupled correctly; parts of the system could get damaged if they are not.

**ATTENTION**

Oil escaping at high pressure can cause skin injury with the risk of serious wounds and infection. Call a doctor immediately if such an incident occurs. Therefore, the installation of hydraulic components in the tractor driver’s cab is strictly forbidden.

All the components of the system should be positioned carefully to avoid parts being damage during use of the equipment.

3.4.1 DESCRIPTION OF FUNCTIONING

The frame of the machine allows the tubular beams, on which the side seeding elements are carried, to be slid lengthways (Fig. 13). The cylinders, operated by a hydraulic system, have the function of opening and closing the frame.

In this way it is possible to choose the width of opening of the whole frame in relation to the number of seeding elements present (Fig. 13) and to the sowing line spacing required, and it is also possible to close the machine in such a way that its overall dimensions are reduced sufficiently for road travel.

Stay well away from the machine while the telescopic frame is opening or closing.

**USE INSTRUCTION**

In order to use correctly the toolbar of the planter, operate as follows:

1) Verify the proper working of the hydraulic system of the planter, only with the machine lifted up from the ground or lowered on its own wheels and props, but with the seeding units on uplifted position. Also in the field, make sure the planter is lifted up before opening or closing the telescopic toolbar.

2) Lubricate daily all sliding parts (toolbar sections, gears shafting, etc...) and in any case after washing the planter.

3) Before operating the row marker device, which is mounted on the toolbar, remember to unhook the two row marker arms and, for your safety, to hook them before transporting. the planter on the road.
3.5 DETERMINATION OF THE ROW DISTANCE
The MONICA seed drill allows the distance between the sowing rows to be changed to 40-50-60-70-75 cm.

CAUTION
Be very careful to carry out the entire operation by following the instructions. All the operations described in this paragraph must be carried out by expert personnel, equipped with protective gloves, in a clean and dust-free environment. Before starting up the equipment, check the area surrounding the machine to ensure that there are no people, especially children or pets, nearby, and ensure that you have excellent visibility.

3.5.1 DETERMINATION OF THE ROW DISTANCE
The row spacing is set on the MONICA seed drill by changing the position of the pins on the end stop bars A and B (Fig. 14):
A - end stop bar of the telescopic frame;
B - end stop bar of the seeding elements.

ATTENTION
These operations should be carried out with the machine closed. Setting the row spacing should always be carried out by changing the pins of both end stop bars, A and B.

To set the row spacing, proceed as follows:
1) Operate the hydraulic system to close the telescopic frame.
2) Position the pins in the holes of bars A and B for the row spacing to be set (Fig. 14).
3) Operate the hydraulic system to open the elements up to the stop, determined by the position of the pins.
4) To close and to reopen the elements of seed along the chassis, in order to verify the correct order of the external seeding elements.

Pages 53 and 54 contain diagrams that show the positions of the pins for setting row spacings 45-50-60-70-75.
MONICA 6 - 7 rows

A End stop bar of the telescopic frame

Position pins for the row spacing indicated

B End stop bar of the seeding elements

Pins to fixed position

---

End stop bar of the telescopic frame

Position pins for the row spacing indicated

End stop bar of the seeding elements

Pins to fixed position

---

End stop bar of the telescopic frame

Position pins for the row spacing indicated

End stop bar of the seeding elements

Pins to fixed position

---

End stop bar of the telescopic frame

Position pins for the row spacing indicated

End stop bar of the seeding elements

Pins to fixed position

---

End stop bar of the telescopic frame

Position pins for the row spacing indicated

End stop bar of the seeding elements

Pins to fixed position

---

End stop bar of the telescopic frame

Position pins for the row spacing indicated

End stop bar of the seeding elements

Pins to fixed position

---

End stop bar of the telescopic frame

Position pins for the row spacing indicated

End stop bar of the seeding elements

Pins to fixed position
3.5.2 TRANSFORMATION from 7 to 6 rows (70-75 cm)

Operations to be performed with the machine on the ground.

In order to sow at 70 or 75 cm (Fig. 15/1), the planting unit must be modified from 7 to 6 planting rows. Remove the central seeding element, taking care to follow the instructions provided below (Fig. 15/3):

1. Fit the parallelogram stop block in the central element;
2. With the element in the operating position, completely lower the equipment to ground level and block the front clod breaker;
3. Slide out the suction tube;
4. Disengage the cardan drive shaft of the seeding element;
5. Remove the screws of the parallelogram and slide out the seeding element;
6. Fit the cardan shaft in the support provided and fasten it to the parallelogram stop block. Place the suction tube in the ring.

If the planting unit is equipped with a microgranulator, proceed as follows:
- close all the MINIMAX distributors of the central microgranulator box (Fig. 15/2);
- remove the left seed drop tube (distribution on central seeding element);
- move the central tube onto the left distributor;
- open the right and left MINIMAX distributor.

To set interrow spacing at 70 or 75, refer to the diagram in page 54. It is important to remember that to change the interrow spacing, the upper and lower knuckle pins must be moved.
3.6 SEED SELECTION

3.6.1 SEED DISTRIBUTOR

A plate (1 Fig. 16), chosen according to the size of the seed, is installed inside the distributors (Fig. 16) (the seed should not be able to enter the hole). Should suction cause some seeds to clog the holes of the plate, these will be left on the ground. The seeder is delivered to the customer with a single set of plates already installed on the distributors. The Manufacturer can supply the client with further sets of plates. (see table 4, page 59).

REPLACEMENT OF SEED DISC AND ADJUSTMENTS

CAUTION
All operations described in this paragraph must be carried out by expert personnel, equipped with protective gloves, in a clean and dust-free environment.

- The seeder must be clean and dry and stably positioned.
- If the power take-off is hooked to the tractor it must be disconnected, the engine turned off, the key removed and the hand brake pulled.
- Only clean parts in good condition must be installed.
- The plate must be assembled with the pegs (2 Fig. 16) pointing towards the inside of the distributor.
- If some of the pegs are bent or missing from the plate, this means that foreign bodies have entered the distributor, in which case the plate must be replaced.
- If there are circular scratches, they must not exceed 1/3 of the plate thickness.
- Hand-tighten only the winged nut that closes the cover (Fig. 17).

N.B. When replacing worn plates, the cover gasket should also be replaced.

These are the operations to be carried out:
1) Unscrew and remove the wing nut (Fig. 17);
2) Open the distributor cover;
3) Insert or replace the disc;
4) If necessary, adjust the seed-spill prevention plate as described further on;
5) Adjust the selector, as described further on;
6) Close the cover and screw the wing nut back on (Fig. 17).
7) Adjust the selector as described further on

REPLACING THE COVER SEAL

Check the whole of the seed distributor cover seal surface regularly (A Fig. 18) for signs of wear.
The seal must be replaced before the surface «A» (Fig. 18), being worn down by the disc movement, reaches surface «B».
Also check that no grooves have been made by the disk along surface «A».

EXPELLER SEEDS

Use the light grey coloured seed expeller (C, Fig. 19) for small size seeds with an average diameter less than 3.5 mm (e.g. pelleted sugar beet seed). Use the black coloured seed expeller (D, Fig. 19) for medium size seeds with an average diameter from 3.5 to 7 mm (e.g. corn).
Remove the seed expellers when using seed with an average diameter greater than 7 mm.
Loosen the screws (1, Fig. 19) and remove the expeller (2).

Assembly: Position the expeller (2) as shown in Figure 19, keeping the expeller pressed against the edge, obtained in the relative seat (3, Fig. 19), block it by the screw (1) kit. The screw is to be mounted only as shown in the picture. Do not interpose any thickness between the expeller and its seat. Make sure the expeller is flat against the seed disk but that it does not come in contact with the disk. Replace the expeller when worn.
SELECTOR ADJUSTMENT
When the indicator (1 Fig. 20) is moved, it commands a cursor (2 Fig. 20), which slightly touches the plate near the holes, causing the excess seeds to fall. The selector is adjusted at each seed and plate change, towards the lower numbers for small seeds (Fig. 20) and vice versa for big seeds (Fig. 21).
IMPORTANT: The selector does not adjust the air flow in the distributor.

ANTI-OVERFLOW PLATE ADJUSTMENT
The anti-overflow plate (1 Fig. 22) can be adjusted to 3 positions and defines the width of the seed inlet gap (2 Fig. 22), so that these cannot flow out of the distributor due to excessive feeding. Adjustment is particularly needed when the ground slopes steeply or when working with small seeds. In this case, it might be necessary to replace the standard plate with a special one to be used exclusively with small seeds.
Spare part order code: 22270133.

3.6.2 VACUUM PUMP
The aspirator (Fig. 23) creates a vacuum inside the distributors, so that the seeds are aspirated onto the holes in the plate. The tensioning and good condition of the belt are therefore of vital importance to ensure the good for the good operation of the aspirator and, hence, the success of the sowing. The belt is correctly tensioned when it does not yield under the pressure of a hand.

WARNING
Make sure that the universal joint is disconnected from the power take-off before carrying out the following operations:
Belt checking procedure:
- Remove the protective housing
- Loosen the 4 screws (1, Fig. 23).
- Loosen the nut (2, Fig. 23).
- If worn, replace the belt (4, Fig. 23).
- Tension the belt by tightening the screws (3, Fig. 23).
- Tighten the bolts loosened before and close the casing.

Vacuometer
The vacuometer (5, Fig. 23) a the vacuum measuring device. The one supplied shows aspiration values ranging from -0 to -100 mbar. The average approximate aspiration values for large seeds are: 60 to -70 mbar for small seeds: -40 to -50 mbar.
Comply with the number of rpm recommended for the power take-off. When necessary, remove the glass of the vacuometer to carry out a cleaning operation with a gentle jet of air or a cloth. If it is necessary to reset the indicator of the vacuum gauge, remove the glass cover and use a screwdriver to take out the screw as shown in Figure 24.
## 3.6.3 Distribution Adjustment

### Seed Chart

<table>
<thead>
<tr>
<th>45</th>
<th>50</th>
<th>65</th>
<th>70</th>
<th>75</th>
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<th>85</th>
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<td>236.000</td>
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<td>113.900</td>
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<td>79.600</td>
<td>78.000</td>
<td>66.000</td>
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<td>69.500</td>
<td>60.800</td>
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<td>3.700</td>
<td>3.000</td>
<td>2.300</td>
</tr>
</tbody>
</table>

### Table 3

| 12.25 | 181.300 | 163.200 | 125.600 | 116.600 | 108.800 | 92.000 | 81.200 |
| 12.30 | 172.900 | 155.000 | 119.700 | 111.100 | 103.700 | 87.200 | 79.200 |
| 12.35 | 164.500 | 148.600 | 114.300 | 106.200 | 99.100 | 82.900 | 74.800 |
| 12.40 | 156.100 | 140.800 | 109.800 | 101.800 | 94.800 | 79.200 | 71.200 |
| 12.45 | 147.700 | 131.000 | 105.800 | 97.800 | 91.200 | 75.600 | 67.800 |
| 12.50 | 139.300 | 122.300 | 98.000 | 90.000 | 83.600 | 68.000 | 60.000 |
| 12.55 | 130.900 | 112.800 | 88.000 | 80.000 | 73.800 | 57.200 | 49.200 |
| 12.60 | 122.500 | 102.500 | 76.000 | 68.000 | 61.600 | 45.000 | 37.000 |
| 12.65 | 114.100 | 92.200 | 62.000 | 54.000 | 47.600 | 31.000 | 23.000 |
| 12.70 | 105.700 | 82.000 | 47.000 | 39.000 | 32.600 | 22.000 | 14.000 |
| 12.75 | 97.300 | 71.400 | 31.000 | 23.000 | 19.000 | 11.000 | 3.000 |
| 12.80 | 89.000 | 61.800 | 15.000 | 9.000 | 5.000 | 0.000 | 0.000 |
DISTRIBUTION ADJUSTMENT
Distribution adjustment must be done in compliance with:
- the kind of seed that has to be distributed;
- the longitudinal distance between one seed and another.

Kind of seed to be distributed:
Identify the diameter of the holes of the seed disk in Table 4, according to the type of seed to distribute.
For special requirements make a specific order.
The values shown on the table are approximate. The definite choice of seed plates is completely up to the user. Complaints for imprecise sowing due to utilization of improper seed plates will not be accepted.

Longitudinal distance between one seed and another:
The longitudinal seeding distance is determined by the number of holes on the seed plate, by the number of teeth and position of the gears on the wheel which transmits the motion to the gearbox, and by how the gears are combined in the gearbox. The seed spacings shown in the table are only indicative values since they are affected by different working conditions; we therefore advise you to check the actual spacing of the seeds in practice.
The Manufacture will not be held liable for any inconsistencies between the values of the table and the actual values found.

On the cover of the gearbox there is a table for adjusting the seeding distance and a table that shows the drive fitted on the gear drive wheel.

1) From the Seed Investment Table:
Depending on both the row distance of the planter and the selected seed investment per hectare, calculate the longitudinal seed planting distance by using Table 3 (Seed Investment Table).
Example:
- Seeding row distance 75 cm;
- number of seeds to be distributed per hectare: 72,000.
According to the "Seed Investment Table", the longitudinal distance between one seed and another is 18,50 cm.
For row distances differing from those listed in the table, apply the following directions:
Longitudinal seeding distance = \( \frac{\text{Ha}}{\text{No. of seeds/ha}} \times 100 \)
Example:
- Ha = 10,000 m²;
- Row distance = 0.90 m;
- No. of seeds to be distributed for hectare = 70,000
Longitudinal seeding dist = \( \frac{10000 \text{m}^2}{70000} \times 0.90 = 15.87 \text{ cm} \)

2) About the Seed Planter:
Verify which couple of pinions (Wheel) is to be found (C-D ill. no. 25) in the seed planter;

Table 4

<table>
<thead>
<tr>
<th>Fori-Holes - Troux Loccher - Agujeros</th>
<th>SEMI</th>
<th>SEEDS</th>
<th>SAMEN</th>
<th>CULTURES</th>
<th>SEMILLAS</th>
</tr>
</thead>
<tbody>
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<td>Ø</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>5,0 / 5,5</td>
<td>Mais (calibre grosse)</td>
<td>Corn (big sizes)</td>
<td>Mais (Grosse Samen)</td>
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<td>Beets - Sorghum</td>
<td>Rüben - Hirse</td>
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<td>36 (*)</td>
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<td>Bohnen</td>
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<td>Beans</td>
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<tr>
<td>72</td>
<td>1,5</td>
<td>Pomodoro (confettato)</td>
<td>Tomato (pilled)</td>
<td>Tomaten (pilliert)</td>
<td>Tomates enrobé</td>
</tr>
<tr>
<td>72 (***)</td>
<td>1,1</td>
<td>Pomodoro</td>
<td>Tomato</td>
<td>Tomaten</td>
<td>Tomates</td>
</tr>
</tbody>
</table>

(*) Special for beans.
(**) The seed distributor cover should be replaced by a special one suitable for small seeds.
For special requirements make a specific order. The values shown on the table are approximate. The definite choice of seed plates is completely up to the user. Complaints for imprecise sowing due to utilization of improper seed plates will not be accepted.
3) From the Table of Longitudinal Seed Planting Distances (Table 5):
- Look for the table that lists the couple of pinions equal to the seed planter’s one;
- Seek the value of the longitudinal seed planting distance previously calculated. **Should there be two or more types of disks that assure the same longitudinal seed planting distance, prefer the disk with the largest number of holes.**
- Move along to the left to see which ratio (A-B Fig. 22) you have to set the gearbox with;

4) About the Seed Planter:
- Set the gearbox with the identified ratio (A-B);
- If the seed planting distance is not obtained with the pinions (wheel C-D) fitted on the planting unit (Fig. 26), check with the table to see if they need to be replaced or have their positions reversed.

To move the chain, open the cover and loosen the chain (1) by means of the lever (2 Fig. 26); Put the chain on the gears selected and align them. Tension the chain again by means of the lever (2 Fig. 26) and close the cover.

- **The gearbox transmission must be checked every time the longitudinal seed planting distance is changed** (see following section).

3.16.4 CHECKING THE GEARBOX TRANSMISSION
To check the correct coupling between the gears inside the gearbox, proceed as follows:
- lift the machine off the ground, switch off the tractor engine, remove the ignition key and engage the parking brake;
- with one hand, turn the transmission wheel in the direction of travel (Fig. 27);
- at the same time, with your other hand, grip the drive axle coming out of the gearbox (F, Fig. 27) to exert a slight resistance to the movement; make sure the axle is rotating together with the transmission wheel;
- if the axle (F) does not turn in these conditions, the gearbox is not set correctly; move levers A and B to engage the combination chosen with the seed chart and repeat the check.
The planting distances reporting in the table are only meant as a guide, as they depend on the different operating conditions of the soil. Therefore, we recommend checking directly the actual distance between the seeds. It is recommended to do trial planting for a few metres to check that seed deposition is taking place as desired, and especially check that the amount of seeds per linear meter corresponds to that intended. The Manufacturer is not responsible for any inconsistencies between the values in the table and the actual values detected.

**Table 5**

<table>
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<th>4 - 4</th>
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**Pneumatici - Tyres - Räder - Pneumatiques - Neumáticos**

<table>
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<tbody>
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</table>
3.7 DEPOSITION OF THE SEED

3.7.1 PLANTING UNIT
In order to ensure that the seeds are all planted at a uniform depth, a few simple adjustments should be made to the planting unit. Adjust the seeding depth by changing the height of the side wheels (1 Fig. 28) using the crank (2 Fig. 28). A numbered scale (3 Fig. 28) enables all of the parts to be adjusted to the same degree. N.B.: the pointer of the adjustment scale is purely progressive; it does not show a variation in cm on the height of the side wheels.

3.7.2 REAR COVERING WHEELS
The rear set-up of the seeding elements is of considerable importance in quality sowing. These elements are crucial to the covering of the seeds after they have been sown. They should therefore be suitably adjusted according to the type of seed and type of ground:
- change the position of the rear wheels on their support as shown in the diagram in Figure 29;
- using the handle (4 Fig. 28), adjust the pressure of the rear inclined wheels for closing and packing the seed furrow.

3.7.3 FRONT CLOD CLEARER
The action of the front clod clearer is crucial to correct and homogeneous sowing; it allows the track of the element's depth wheels (1 Fig. 28) to be cleared of the largest clods (A Fig. 30) that could cause irregular planting depth.

IMPORTANT!
- Use the front clod clearer only where there are large clods.
- The use of the clod clearer must not create dips in the seedbed.
- Not suitable for sowing on stony ground.

ADJUSTMENT
- Identify a particularly cloddy area of the ground to be sown.
- Put the seed drill in its average working conditions with seed and fertilizer hoppers half full.
- Set the planting depth (see chapter 3.7.1) according to the agronomic choices dictated by the seed to be distributed.
- Fully raise all the front clod clearers.
- With the tractor's power take-off disconnected and the seed drill on the ground in its working position, move over the cloddy area for 4 to 5 metres.
- On the outer element only, lower the front clod clearer to 3 to 4 cm from the level created by the depth wheels of the seeding element (Fig. 30), and the front earth-opening blade to approx. 2 to 3 cm from the wing of the clod clearer.
- Move for a short stretch with the seed drill and check the behaviour of the clod clearer and the whole seeding element.
- If the ground is compact, facilitate the penetration of the element's furrow opener discs by giving greater depth to the front earth-opening blade of the clod clearer (Fig. 31).
- Once the best position of the clod clearer has been determined, set the other seeding elements to this position, using as reference the notches marked on the individual elements of the clod clearer.

Changing from one type of ground to another entails adjustment of the clod clearer's position.
3.7.4 PLANTING UNIT EXCLUSION
Switch off the tractor and remove the ignition key.
Raise the single seeder from the ground as follows:
- Turn the winged nut (1 Fig. 32) of the hooking lever anticlockwise.
- Lift the planting unit using the lever (2, Fig. 33).
- Press and hold down the sleeve (1 Fig. 34) in the direction indicated by the arrow, push forward while turning the ring nut (2 Fig. 34) until the iron pin comes free.
- Pull the sleeve back as far as it will go (1 Fig. 34).
- To render the drive operative again, push the sleeve forward and lock the ring nut again against the iron pin.

IMPORTANT!
Pay the greatest attention to the couplings of the cardan shafts (A, Fig. 34) and follow the position of the crosses.

3.7.5 PLANTING UNIT TRANSMISSION
Each case is equipped with a safety pin which breaks (1 Fig. 35) when the rotating of the seeder plate is forced or jams as a result of foreign bodies entering the distributor (paper, string etc.) Should this occur, pour the seeds out of the container, check and clean the distributor, check the plate pegs and replace the safety pin.
Each transmission shaft has a torque limiter with a sound alarm (3 Fig. 35) that, when the pin breaks (1 Fig. 35), signals the anomaly or breakdown that has occurred in the distributor. If this happens, stop at once and remedy the situation; remove the broken pin and replace it (use the pin punch supplied).

IMPORTANT! Do not use metal pins. Always use original spare parts.
WARNING! Do not over-tighten the screws holding the case (2 Fig. 35). It should be able to oscillate.
3.8 ROW MARKER

The row marker is a machine that traces a reference line parallel to the tracks of the tractor on the ground. Once the tractor has completed its run and it has turned around, follow the reference row with one of the front wheels (L1, Fig. 36) or with the centre of the tractor (L2, Fig. 36) according to the row marker employed.

where:
L = the distance between the outer most unit and the row marker;
D = the distance between the rows;
N = the number of units operating;
C = the tractor’s front wheelbase.

Each time it passes, the seeder will mark a reference line on the side opposite to the previous passage. Row-marker arm inversion is activated by the tractor’s hydraulic distributor control. The hydraulic row marker device has a valve that alternately operates the two arms, so that just one hydraulic tractor distributor is present.

When the system is not in use protect the quick couplings with the hoods provided and house the hydraulic pipes in the support provided for the purpose.

System regulation

The hydraulic systems provided come equipped with one-way flow regulators (Fig. 37) which allow for the regulation of the quantity of oil during opening or closing, depending on how the regulators have been installed.
1) Regulator for closing the row marker;
2) Regulator for opening the row marker.

- Flow from A to B, free;
- Flow from B to A, choked (regulated).

Calibration of the flow regulators:
- Slacken the lock nut (C Fig. 37).
- Fully close the oil flow (CLOSED).
- Using the hydraulic distributor of the tractor, operate the system and open the oil flow by turning the knob (D Fig. 37).
- When finished making the adjustment, tighten the lock nut again.
- Carry out the calibration on all four regulators.

WARNING

Make sure that the result of this adjustment does not cause the rising or descent speed to damage the structure itself.

For normal soils the correct working position of the disc is that shown in Fig. 38 ref. A; for strong soils turn it over as shown in ref. B Fig. 38.

WARNING

During travel by road, lock the row marker arms in a vertical position with the safety bolts (C Fig. 41) and turn the discs to come within the machine’s overall dimensions (D Fig. 41) locking them with the bolts supplied.

Before travelling on the road, with row marker arm for track at the tractor centre, rotate the upper arm (E) as shown in figure 41.
3.8.2 ROW MARKER DISK ADJUSTMENT

Row marker with trace on the tractor wheel (L1)
Using the Table 6 shown, read the distance (L1 Fig. 36) at which the disc is to draw the reference line. Regulate the disc at the correct distance, tilt it slightly and firmly tighten the nuts (Fig. 39).

For distances not covered by the table, use the following rule:
\[ L = \frac{D(N+1) - C}{2} \]

Row marker with trace in the centre of the tractor (L2)
Using the Table 6 shown, read the distance (L2 Fig. 39) at which the disc is to draw the reference line. Regulate the disc at the correct distance, tilt it slightly and firmly tighten the nuts (Fig. 40).

For distances not covered by the table, use the following rule:
\[ L = \frac{D(N+1)}{2} \]

The row marker arms have a safety bolt (A Fig. 40) so that the planter unit structure will not be damaged. If they happen to bump into an obstacle, this bolt will break and so the row marker arm will rotate to leave the equipment structure intact. There are spare bolts on the row marker arm support (B Fig. 40).
3.9 DISTRIBUTION OF CHEMICAL PRODUCTS

Fertilizers and insecticides are distributed by means of special dosers (A, Fig. 42-43) fitted under the corresponding hoppers. The hoppers are equipped with a device called the SPEEDY SET (B, Fig. 42-43), through which centralized adjustment of the MINIMAX volumetric dosing devices can be carried out for each single hopper. Periodically check that the sliding hatches are aligned.

Depending on how the dosers are regulated please refer to the tables below you can determine the quantity of fertilizer and insecticide needed to cover a hectare of land.

HOPPER AND TANK FILLING

Hoppers and tanks can be filled by hand or using a lifter with a capacity of at least 200 kg, which must be regularly approved by the relative authorities. Remember that weights of more than 25 kg must either be lifted by more than one operator or the above-mentioned lifter must be used following the instructions included in the relative use and maintenance manual.

WARNING
- All fertilizer spreader tank loading and unloading operations must be carried out with the planting unit at a standstill, on the ground, with the frame open, with the hand brake on, with the motor switched off and the starter key removed from the control panel. Make sure that chemicals are kept out of harm’s way.
- All operations must be carried out by trained staff wearing suitable protection (overalls, gloves, boots, masks etc) in a clean, dust-free environment.
- Do not place any bags of fertilizer or any other object on the fertilizer distributor container covers to avoid breaking them or endangering property or persons.
- Load from the outer sides of the machine.
- When filling the seed, fertilizer and insecticide hoppers, ensure that no foreign bodies (string, paper, etc.) enter them.
- The seeding machine can transport chemical substances. Do not allow children, people, pets to come near the seeding machine.

The plastic distributors do not require lubrication. On completion of the work, the hopper should be carefully cleaned. This particularly applies to the fertilizer hoppers (Fig. 44).

Adhere to the ecological standards applicable for the disposal of polluting liquids.

3.9.1 REGULATING THE FERTILIZER INTERRING HOE

The fertilizer interring hoes operate parallel to the row being sown, at a standard distance.

Before utilizing the seeder, ensure that this distance is suitable for the type of fertilizer to be distributed and the quantity to be distributed per hectare, so as to ensure that the crops will not be damaged.

Should the distance not be suitable, distance the hoes further from the row being sown. Also regulate the depth at which the fertilizer is interred, by changing the height of the spring (Fig. 45).

After completing this operation, cut any extra off the length of the tube so as to prevent the creation of folds which could obstruct the flow of the fertilizer (Fig. 45).
3.9.2 TABLE OF DISTRIBUTION QUANTITY (kg/ha)

CAUTION: the MINIMAX batcher, adjusted to the first positions (B0+C0 or 1+1.5 with SPEEDY SET) may become clogged because of the small opening, especially if fertilizers with irregular grain size are used. If the quantity of fertilizer to be delivered comes within the first positions (darkened lines on the table) get in touch with the manufacturer. The figures given in the table are approximate as the specific weight and size of the grains often vary. In any case, always refer to the specific weight shown on the product packaging; if this is not given, get in touch with the manufacturer.

IMPORTANT: on the distribution table, according to the row spacing, check which pair of pinions are present on the seed drill (A-B Fig. 47).

To change the pair of pinions, work as follows:
- Open the cover of the box and slacken the chain (1 Fig. 47).
- Put the chain on the required gears and align them.
- Tighten the chain again and close the cover.

IMPORTANT: it is possible to disable the distribution of insecticide (Microgranulator) by releasing the screw as shown in Figure 48.
### SPEEDY SET

#### 3.9.3 Table of distribution quantity in kg/ha

<table>
<thead>
<tr>
<th>Row Spacing</th>
<th>Distribution Quantity kg/ha</th>
<th>Specific Weight kg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>45 cm</td>
<td>0.8 1.0 1.2 0.8 1.0 1.2 0.8 1.0 1.2</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>50 cm</td>
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<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>60 cm</td>
<td>0.8 1.0 1.2 0.8 1.0 1.2 0.8 1.0 1.2</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
</tbody>
</table>

#### Row Spacing

<table>
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<tr>
<th>Pos.</th>
<th>Interfila - Row spacing</th>
<th>Distance entre les lignes</th>
<th>Distancia entre las hileras</th>
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<td>0.8 1.0 1.2 0.8 1.0 1.2 0.8 1.0 1.2</td>
<td>0 0 0 0 0 0 0 0 0</td>
<td></td>
</tr>
<tr>
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</tr>
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</tr>
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<td>0 0 0 0 0 0 0 0 0</td>
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</tr>
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<td>0 0 0 0 0 0 0 0 0</td>
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</tbody>
</table>

**Interfila - Row spacing**

- **Distance entre les lignes**
- **Distancia entre las hileras**

**Specific Weight kg/m³**

- 0.8
- 1.0
- 1.2
- 0.8
- 1.0
- 1.2
- 0.8
- 1.0
- 1.2

**Table of Spreading Quantity in kg/ha**

- **Cod. G19502563**
### Microgranulatore - Tabella di distribuzione

**Microgranule - Distribution table**

**Microgranulador - Prospectos de distribución**

**Microgranulateur - Tableaux de distribution**

**Mikrogranulatmenge - Tabelle**

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**3.9.4 MICROGRANULATOR - Table of distribution quantity in kg**

#### USE AND MAINTENANCE

**USE AND MAINTENANCE**

MASCHIO GASPARDO S.p.A.

---

**Cod. G19030258**

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**Posizione regolazione distributore** - Position of distributor adjustment - Einstellung Einstellvorrichtung

**Posición regulación distribuidor** - Posición regulación distribuidor

<table>
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<tr>
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<th>Reihenabstand - Distance entre les lignes</th>
<th>Distancia entre las hileras</th>
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<td></td>
<td></td>
</tr>
<tr>
<td>60 cm</td>
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**Peso specifico - Specific weight** - Spezifisches Gewicht - Poids spécifique - Peso específico : Kg/dm³

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I valori della tabella costituiscono solo valori indicativi, in quanto il peso specifico e la grandezza dei granelli sono spesso diversi. - The chart values are only approximate, since the specific weight and the size of the granules often differ. - Die Tabellenwerte sind Richtwerte, da das spezifische Gewicht und die Größe der Körner oft unterschiedlich sind. - Les valeurs indiquées sur le tableau de réglage constituent simplement des valeurs données à titre indicatif car le poids spécifique et la grandeur des grains sont souvent différents. - Los valores de la tabla son sólo indicativos, ya que el peso específico y las dimensiones de los granos son, generalmente, diferentes.
4.0 OPERATIONS FOR PUTTING THE MACHINE INTO SERVICE

4.1 WHEN THE MACHINE IS NEW
- Assemble onto the equipment any parts that may have been delivered disassembled for transport purposes (follow the instructions given in the assembly diagrams attached to these parts).

4.2 CHECKS AND PREVENTATIVE MAINTENANCE
- Check that the safety bolts are present on the pins:
  a) 3-point linkage connecting pins;
  b) pins for locking the row marker arms for road transport.
- Check that the pipes of the hydraulic system are undamaged.
- Check that all the screws are tight.
- Grease the universal joint spiders.
- Grease the row-marker disc pin.
- Grease the pin of the seeding depth control wheels.
- Check that all the suction tubes are well connected.
- Check that all the drive shafts are properly engaged.
- Carefully check moving parts, driving parts and seed distribution.

4.3 ATTACHMENT THE TRACTOR
- Connect the equipment to the third point of the tractor using the safety devices.
- Connect the cardan shaft.
- Connect the hydraulic pipes to the distributors of the tractor.
- Plug the visual signalling units into the socket of the tractor's electrical system.
- Remove the safety bolts of the row marker arms and the toolbar, and operate the hydraulic systems to check they are working correctly. If necessary, adjust the flow regulators where present.
- Lift the equipment off the ground and remove the support legs (Fig. 49).
- When travelling by road, lock the row marker arms and the toolbar in transport position with the safety bolts.

4.4 PREPARING FOR SEEDING
- From the seed chart, according to the row spacing, obtain the distance between one seed and the next along the row.
- From the longitudinal sowing distance adjustment table, obtain the combinations of gears on the gearbox and on the drive wheel that will produce this distance.
- Insert the right seed discs in the distributors.
- If beet seed is to be distributed, use the seed ejector. In other cases, remove the ejector.
- Put a small quantity of seed in the hoppers.
- From the driver's seat of the tractor, raise the seeder;
- Operate the power take-off at 540 rpm;
- Using the gear lever, put the tractor engine into neutral;
- Brake the tractor and if necessary, secure it with wooden blocks sized according to the size of the wheels;
- Manually turn the seeder gear drive wheel in the direction in which the machine is moving;
- Adjust the selector and control through the grate that the plate is only holding one seed per hole;
- Adjust the planting depth by turning the side wheels by means of the handle.
- According to the type of ground, adjust the distance of the rear wheels and their pressure on the ground for closing the seed furrow.
- Check the degree of preparation of the seedbed and adjust the height of the front clod clearer.
- Move along the seedbed for a few metres with the equipment in working position, and adjust the third point tie rod to obtain true perpendicularity between machine and ground.
- Start sowing: after a few metres check whether the distributors are correctly dropping one seed at a time.

6.5 DISTRIBUTION OF CHEMICAL PRODUCTS
- Hoppers and tanks can be filled by hand or using a lifter with a capacity of at least 200 kg, which must be regularly approved by the relative authorities.
- When filling the fertilizer and insecticide hoppers, be careful that foreign bodies do not enter (string, bag paper, etc.).
- Set the quantity to distribute following the information given in the table (the values given in the table are a rough guide only).
- Adjust the working depth and the distance of the fertilizer placement units from the sowing row, carefully following the specific agronomic instructions of each crop.
4.6 DURING SEEDING
- After having performed all the operations above, the seed drill is ready to work. However, it is recommended to do trial planting for a few metres to check that seed deposition is taking place as desired, namely check that the amount of seeds per linear meter corresponds to that intended. Example: if the longitudinal planting distance set is «d = 16 cm», this means that in 160 cm (L) there must be 11 seeds (10 spaces) as shown in the figure below.

![Diagram showing seed distribution](image)

4.7 THE END OF OPERATION
- Disconnect the power take-off.
- Lock the row marker arms and the toolbar in transport position with the safety bolts.
- At the end of seeding, discharge the remaining seeds through the distributor door (Fig. 51).
- Carry out road transfers with the hoppers empty.
- During road transport, observe the Highway Code in force in your country.

4.8 DAILY REST PERIOD
- Put the support legs in the parking position (Fig. 50).
- Disconnect the cardan shaft.
- Unhook the equipment from the tractor.
- Wash the equipment with abundant water, giving special attention to the hoppers that contained chemical substances, and then dry it.
- Put it in a place where it will be out of the reach of unauthorized persons.
5.0 MAINTENANCE

Here follows a list of various maintenance operations to be carried out periodically. Lowered operating costs and a longer lasting seeding machine depend, among others, on the methodical and constant observation of these rules.

The maintenance periods listed in this booklet are only indicative and are for normal conditions of use, therefore they can be varied depending on the kind of service, the more or less dusty surroundings, seasonal factors, etc. For more serious conditions of service, maintenance will logically be done more often.

All operations must be carried out by expert personnel, equipped with protective gloves, in a clean and dust-free environment.

All maintenance operations must be carried out with the machine hooked up to the tractor, the parking brake engaged, the engine off, the ignition key removed and the equipment sitting on suitable supports on the ground.

ATTENTION

USING OILS AND GREASES
- Before injecting grease, the nipples must be cleaned to avoid mud, dust and foreign bodies from mixing with the grease, otherwise they will reduce or even annul the effect of the lubrication.
- Always keep oils and grease out of reach of children.
- Always read warnings and precautions indicated on the containers carefully.
- Avoid skin-contact.
- After use wash the equipment thoroughly.
- Treat the used oils and polluting liquids in conformity with the laws in force.

RECOMMENDED LUBRICANTS
- For lubrication in general, we advise: OIL SAE 80W/90.
- For all greasing points we advise: AGIP GR MU EP 2 GREASE or equivalent (specifications: DIN 51825 (KP2K)).

CLEANING
- The products used for cleaning must be disposed of according to the laws in force.
- Clean and maintain the machine after putting any removed guards back in position. Replace them with new ones, if they are damaged.
- Clean the electrical components only with a dry cloth.

USING PRESSURISED CLEANING SYSTEMS (Air/Water)
- Always keep in mind the rules that regulate use of these systems.
- Do not pressure clean electrical components.
- Do not pressure clean chromium-plated components.
- Do not place the nozzle in contact with the parts of the equipment, especially the bearings. Keep it at a min. distance of 30 cm from the surface to be cleaned.
- Thoroughly lubricate the equipment, especially after cleaning it with pressurised systems.

HYDRAULIC SYSTEMS
- Hydraulic systems must be maintained exclusively by skilled operators.
- The hydraulic system is under high pressure; because of the accident risk, when searching for leakage points special auxiliary instruments should be used.
- In case of participation on the hydraulic system, to unload the hydraulic pressure carrying all the hydraulic commandos in all the positions some time after to have extinguished the motor.
- Oil escaping at high pressure can cause skin injury with the risk of serious wounds and infection. Call a doctor immediately if such an incident occurs. If the oil with surgical means is not removed quickly, can take place serious allergies and/or infections. Therefore, the installation of hydraulic components in the tractor driver’s cab is strictly forbidden.

All the components of the system should be positioned carefully to avoid parts being damage during use of the equipment.
- At least once a year have the hydraulic pipes checked for wear by an expert.
- Replace the hydraulic pipes if they are damaged or worn by aging.
- Replace the hydraulic pipes every 5 years even if they have not been used (natural aging).

Figure 52 (R) shows hydraulic pipes bearing the year of manufacture as an example.

After the first 10 hours of operation and then after every 50 hours, check that:
- all the elements of the hydraulic system are water-tight;
- all the joints are tight;

Before starting the machine up, check that:
- the hydraulic pipes are connected correctly;
- the pipes are positioned correctly, and they are free to move during standard manoeuvres;
- any damaged or worn part is replaced, if necessary.

Replace the hydraulic pipes in the following cases:
- when external damage is identified such as cutting, tearing and wear due to friction, etc.;
- when they are deteriorated on the outer surface;
- when they are deformed beyond their natural shape due to crushing, formation of bubbles, etc.;
- when leaks are identified near the pipe sheath (S, Fig. 52);
- when the sheath is corroded (S, Fig. 52);
- 5 years after their manufacture (R, Fig. 52).
5.0.1 WHEN THE MACHINE IS NEW
- Grease all parts indicated by transfer nr. 14 ('GRASE') at page 45 of this leaflet.
- Lubricate all the transmission chains with mineral oil (SAE 80W/90).
- After the first hours of work check that all the bolts are still tight. WARNING! Do not over-tighten the screws holding the case (10, Fig. 35). It should be able to oscillate.

5.0.2 AT THE BEGINNING OF THE SEEDING SEASON
- Check the pressure of the tyres (see technical data table).
- Lubricate all the transmission chains with mineral oil (SAE 80W/90).
- Check the fixing and the state of wear of all the suction tubes and the delivery tubes for fertilizer and other chemical products.
- Run the seeding machine loadless, the airflow clears the pipes of condensation and removes any impurities.
- Check the tensioning of the aspirator belt (Fig. 23).

5.0.3 EVERY EIGHT HOURS OF OPERATION
- Grease the pin of the seeding depth control wheels (1, Fig. 53).
- Lubricate all the transmission chains with mineral oil (SAE 80W/90).
- Lubricate the universal joint spiders.
- Grease the bevel gear pair of the cardan shaft of the planting units (2, Fig. 53).
- Grease the frame (5, Fig. 54)

5.0.4 EVERY FIFTY HOURS OF OPERATION
- Inspect the condition of the seed plates; if any of the pegs are missing or bent, replace the plate with an original spare; if there are circular scratches on the plates they must not exceed 1/3 of the disc thickness.
- Clean the seed distributor carefully and thoroughly; replace the cover seal if necessary.
- Check the tensioning of the aspirator belt (Fig. 23).
- Make sure the toothed wheels are properly aligned and the transmission chains are tensioned to prevent them from wearing out in little time or a failure affecting the transmission parts.
- Check that all the bolts are still tight.
- Grease all the joints of the row marker.

5.0.5 EVERY SIX MONTHS
- Oil the height adjuster screw the deph wheels (2-3, Fig. 53).
- Grease the drive wheel oscillating bearings.

5.0.6 PERIODICALLY
- Check the pressure of the seed drill tyres (see «1.3 Technical Data»).

5.0.7 EVERY FIVE YEARS
- To replace all the tubes of the hydraulic systems.

5.0.8 EVERY 400 WORKING HOURS
- Change the speed change gear oil completely with SAE30-type oil (3.5 Kg).

5.0.9 REST PERIODS
At the end of the season, or if a long period of rest is foreseen it is advisable to:
- Wash the equipment thoroughly with water, especially the chemical substance hoppers, then dry them. Clean the electrical components only with a dry cloth.
- Carefully check for worn or damaged parts and replace them where required.
- Check the state of wear of the transmission chains and toothed wheels. Replace damaged or worn out parts, if required. Use solvent to clean the transmission chains, the toothed wheels and the chain stretchers. Lubricate with mineral oil (SAE 80W/90) when dry.
- Adjust the belt of the diffusion air pump and and replace it if necessary.
- Firmly tighten all screws and bolts.
- Apply protecting oil to all unpainted parts.
- Protect the equipment with a (nylon) cover.
- Then position it stably in a dry place out of the reach of unauthorized people

It is in the interests of the user to follow these instructions carefully, as when work recommences, he will find the equipment in perfect condition.
## 5.1 PROBLEMS, CAUSES AND SOLUTIONS

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<th>PROBLEMS</th>
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| Irregular seed drilling (inaccurate distance between seeds). | 1) Wear of furrow-opening coulter.  
2) Over-tensioned tensioning spring of V seed-covering wheels.  
3) Unsuitable rear seed-covering wheels.  
4) Deformed or worn seed disc (over 1/3 of its original thickness).  
5) Deformed or missing seed disc pins.  
6) Worn or broken seed disc gasket.  
7) Badly adjusted moving selector. WARNING! The selector does not regulate the amount of air coming into the seed distributor.  
8) Flat tyres: gear ratio is altered.  
9) Forward speed is too fast.  
10) Incorrect WHEEL-GEARBOX AXLE ratio and/or gearbox adjustment.  
11) Drop in seed aspirator revs.  | 1) Replace  
2) Slacken  
3) Replace  
4) Replace the seed disc. We advise replacing the gasket when replacing the seed disc.  
5) Replace the seed disc.  
6) Replace the gasket.  
7) Adjust the selector:  
   - Small seeds (small numbers of selector).  
   - Large seeds (large numbers of selector).  
8) Pump up according to technical data table.  
9) Reduce the drilling speed.  
10) Consult the WHEEL-GEARBOX table and change the ratios as necessary.  
11) Check:  
   - a) belt tension  
   - b) tractor’s power take-off revs  
   - c) breakage of air tubes to the seeding elements.  |
| | 12) Wear of distributor drive shaft joints.  
13) Use of small seeds or seeds with electrostatic charge (rape, beet).  
14) The seed drill is not perpendicular to the ground and is pointing forwards.  
15) The furrow opener discs fill up with earth because they are sloping backwards.  
16) The furrow opener discs are not turning. | 1) Replace  
2) Slacken  
3) Replace  
4) Replace the seed disc. We advise replacing the gasket when replacing the seed disc.  
5) Replace the seed disc.  
6) Replace the gasket.  
7) Adjust the selector:  
   - Small seeds (small numbers of selector).  
   - Large seeds (large numbers of selector).  
8) Pump up according to technical data table.  
9) Reduce the drilling speed.  
10) Consult the WHEEL-GEARBOX table and change the ratios as necessary.  
11) Check:  
   - a) belt tension  
   - b) tractor’s power take-off revs  
   - c) breakage of air tubes to the seeding elements.  |
| Seeds spill over from the distributor. | Anti-spill-over plate too open. | Close or replace with G22270133. |
| Few seeds reach the distributor. | Anti-spill-over plate too closed. | Open |
| Seed disc does not rotate or does not work correctly. | 1) Seed distributor bevel gear is stuck.  
2) Seed distributor bevel gear is worn or broken.  
3) Disc feed hub has oxidized.  
4) Seeds dressed with sticky products that increase the friction between disc and gasket.  
5) Broken plastic safety bolt.  
6) Moving selector is too closed.  
7) Use of fixed selector with large seeds (beans, chickpeas, etc).  
8) Fixed selector is bent and knocks against the disc.  
9) Worn or broken transfer case.  
10) Distributor transmission universal joint not hooked up. | 1) Free it with anti-seize products.  
2) Replace (replace bushings and gear axle).  
3) Free it with anti-seize products.  
4) Clean disc and gasket often. If possible, use other dressed products.  
5) Replace  
6) Open  
7) Remove the fixed selector.  
8) Replace  
9) Replace  
10) Hook up |
| The seeds fall off the seed disc. | 1) Insufficient suction  
   a) Slack belt  
   b) Broken belt  
   c) Holes in air tubes  
   d) Blocked air tubes  
2) Rev speed not constant or not sufficient.  
3) Seed disc holes of insufficient diameter. | 1) a. Tension the belt  
   b. Replace  
   c. Replace  
   d. Cleaning (check the suction in the tube with your palm at the seed distributor end).  
2) Use the tractor’s hand accelerator.  
3) Replace the seed discs. |
| Seeds on surface. | 1) Wrong seeding depth setting.  
2) Obstructed seed delivery tube.  
3) Insufficient pressure of the rear seed-covering wheels.  
4) Rear seed-covering wheels not suitable for the ground.  
5) Use of stainless steel seed-covering wheel on damp soil.  
6) Ground not suitably prepared.  
7) Bent planting unit frame (example: caused by knocks from stones on the ground).  
8) Seed drilling on steeply sloping ground. | 1) Correct the depth setting.  
2) Cleaning  
3) Increase the pressure of the rear wheels on the ground.  
4) Replace  
5) Disable the stainless steel seed-covering wheel.  
6) Prepare the ground carefully.  
7) Restore the planting unit frame.  
8) Regular seed drilling is not guaranteed for slopes greater than 20%. |
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</table>
| Seeds too deep. | 1) Wrong seeding depth setting.  
               2) Excessive pressure of the rear seed-covering wheels.  
               3) Unsuitable rear seed-covering wheels. | 1) Correct the depth setting.  
               2) Reduce the pressure of the rear wheels on the ground.  
               3) Replace |
| Irregular seed drilling depth. | Clod clearer set too low. | Raise the clod clearer; it must be set as shown in the instruction booklet. |
| The seed furrow remains open and the seeds uncovered. | 1) Rear seed-covering wheels a long way from the seed furrow.  
               2) Insufficient pressure of the rear seed-covering wheels.  
               3) Rear seed-covering wheels not suitable for the ground. | 1) Adjust the distance between wheels.  
               2) Increase the pressure of the rear wheels on the ground.  
               3) Replace |
| The gearbox chain jumps off the gears. | The two pinion axles are not parallel to each other. | Loosen the 3 axle fixing bolts and adjust the position of the axle support. |
| Irregular distribution of chemical products (Fertilizers and Microgranulates) | 1) Wrong setting of the MINIMAX distributor and/or gear ratios.  
               2) Product with specific gravity different to those indicated in the table.  
               3) Use of non-granulated product (dusty).  
               4) Delivery tube bent sharply and/or blocked by deposits.  
               5) Obstructed furrower element.  
               6) Distributor dirty with deposits.  
               7) Protective grille fitted the wrong way round (after maintenance).  
               8) Fertilizer on surface. | 1) See distribution table and correct.  
               2) Protract the values of the table to the new specific gravity.  
               3) Dusty products are not suitable for this type of distribution. Change product.  
               4) Check the length, shorten them and straighten them. Cleaning.  
               5) Cleaning  
               6) Cleaning  
               7) Check the position (a gap of about 1 cm must remain on the back).  
               8) Increase the penetration power of the disc and ballast the seed drill frame. |
| Row marker does not work or works irregularly. | 1) Impurities present in the hydraulic system.  
               2) The row marker arms rise too quickly (damage to the structure). | 1) Clean the exchange valve and the nipple with calibrated hole fitted on the hydraulic cylinders of the row marker arms (where present).  
               2) Work on the flow regulators to correctly set the system during the upward movement of the row marker arms. |

### 6.0 DEMOLITION AND DISPOSAL

This operation is to be carried out by the customer.

Before demolishing the machine, you are advised to carefully check its physical condition and ascertain whether there are any parts of the structure that may be susceptible to structural collapse or breakage during demolition.

The customer should operate in compliance with the environment protection laws in force in his/her country.

![CAUTION](image)

The machine demolition operations should be carried out by skilled personnel only, equipped with suitable protective clothing (safety footwear and gloves) and auxiliary tools and equipment.

All the disassembly operations for demolition should be carried out with the machine stopped and detached from the tractor.

Before demolishing the machine, you are advised to render harmless all the parts that may be a source of danger and therefore:
- scrap the structure using specialized firms,
- remove any electrical apparatus according to the laws in force,
- collect oils and greases separately, to be disposed of through specialized firms, in accordance with the regulations of the country in which the machine was used.

When the machine is demolished the CE mark should be destroyed together with this manual.

Last but not least, we remind you that the Manufacturer is always available for any and all necessary assistance and spares.
**EC Declaration of Conformity**

We hereby declare under our own responsibility that the machine complies with the safety and health requirements established by European Directive 2006/42/EC. The following harmonized standards have been used for depiting the machine: UNI EN ISO 4254-1:2010, UNI EN ISO 4254-5:2010*, UNI EN 745:2010**, UNI EN 14018:2009*** as well as technical specifications ISO 11684:1995. The technical file is compiled by Egidio Maschio – corporate headquarters.

*Standard used for rotary tillers and power hoes only - **Standard used for seed drills and combined machines only.

**EG VERKLARING VAN OVEREENSTEMMING**


*Norm alleen gebruikt voor cultivatoren en draaiende shoffemachines - **Norm alleen gebruikt voor snijmachines - ***Deze norm wordt alleen gebruikt voor gecombineerde

**EG-Konformitätserklärung**


*Norm, die nur für Bodenfräsen und Kreiseleggen verwendet wird. **Norm, die nur für Sämaschinen und Kombi-Maschinen verwendet wird.

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*Norme utilizzate solo per le motocuotere e le frasche rotative - **Norme utilizzate solo per i trinci - ***Norme utilizzate solo per le seminatrici e le macchine composte

**EU-overeenstemmelseserklæring**


*Standard, som kun vedrører jord- og roterende harve - **Standard, som kun vedrører hakkemaskiner - ***Forskriften gælder kun for kombi-maskiner

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*Norma utilizada solo para los motocuoteres y las fresadoras rotativas - **Norma utilizada solo para las cortadoras - ***Norma utilizada solo para las seminadoras - **Norma utilizada para maquinas combinadas

**EU-overeenstemmelseserklæring**


*Standard som endast har använts till jord- och roterande harv - **Standard som endast har använts till hackmaskiner. - ***Forskriften gäller kun för kombikommer

**Déclaration de Conformité CE**


*Norme utilisée seulement pour les motocuoteres et les fraises rotatives - **Norme utilizzata solo per i trinci - ***Norma utilizzata solo per le seminatrici e le macchine composte

**Vakuutus EY yhdenmukaisuudesta**


*Standardi koskee ainoastaan traktoritorninosi ja pyöräisiä - **Standardi koskee ainoastaan niiniloitokset - ***Ainoastaan yhdenmukaisia koskevia standardia

**Δήλωση συμμόρφωσης ΕΚ**


*Πρότυπο που χρησιμοποιείται μόνο για καλλιεργητικές μηχανές και περιπτερικές οβεράνες - **Πρότυπο που χρησιμοποιείται μόνο για κατασκευές - ***Πρότυπο που χρησιμοποιείται μόνο για απαρτικές μηχανές σε συνδυασμό με οβεράνες.

*Norma používána pouze pro kultivátory a rotační brány - **Norma používána pouze pro rezaky - ***Norma používána pouze pro seč stroje a kombinované stroje
USATE SEMPRE RICAMBI ORIGINALI
ALWAYS USE ORIGINAL SPARE PARTS
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